SMACNA CONTRACTORS PERFORMANCE INFORMATION

Performance Based Studies Research Group (PBSRG)
Del E. Webb School of Construction
College of Engineering and Applied Sciences

ARIZONA STATE UNIVERSITY

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SMACNA
TESTING & RESEARCH
INSTITUTE

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SCHOOL OF CONSTRUCTION
College of Engineering and Applied Sciences
ARIZONA STATE UNIVERSITY

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Dean T. Kashiwagi, Ph.D., PE
Jamie Conner
John A. Savicky

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RESULTS OF SMACNA TESTING & RESEARCH INSTITUTE RESEARCH EFFORTS WITH THE PERFORMANCE BASED STUDIES RESEARCH GROUP (PBSRG)

Objectives: The SMACNA Testing and Research Institute received a grant from SMACNA to sponsor through the University of Arizona a study of a performance based procurement, (now referred to as Performance Based Information System (PBIS). The PBIS was designed to seek a more performance based contract award alternative to the low bid system. Under the grant the deliverables resulted in two reports: the development of performance criteria for evaluations (Attachment A), educational materials and presentations to facility owners, and documentation showing that performing union contractors can bring value to the facility owners and increase market share for performing contractors.

The objectives of the research effort included:

1. Educate facility owners on the value of performance.
2. Identify performance of SMACNA contractors.
3. Identify the areas that SMACNA contractors could increase their performance (as defined by the owners).
4. Identify new markets by educating facility owners to buy based on performance and price instead of only on low bid.

Results

The overall research program identified that the most critical performance areas could improve in mechanical and HVAC contracting operations. The areas identified for improvement were:

- Change order response
- Effectiveness of TQM plans
- Speed and quality of rectifying punch list items
- Minimization of time lost in resolving problems
- Full time service department response
- Timeliness in updating reports
- Shop / production response
- Minimization of punch list
- Subcontractor's quality of work and skill level
- Start-up and commissioning programs
- Ability to close out projects efficiently
- Temperature control
- Timely updating of project schedules and reports
- Noise level

SMACNA Contractors When Compared to Others

After eliminating all contractors with less than 10 references used to develop performance ratings, SMACNA contractors were compared to the non-SMACNA contractors with the following results:

- Of the 35 criteria (Attachment B), SMACNA contractors scored higher in 34 (97%) criteria.
- The ten factors making a large difference were:
  - Skill level of craftsmen
  - Quality of finished product
  - Housekeeping
  - Coordination
  - Minimization of punch list

- Update of schedule
- Customer satisfaction
- Technical knowledge
- Minimization of lost time
- Ability to install performing systems

Effective Results

The overall study as well as the success of a performance based information system for the procurement of construction services relies on an educated and committed owner and an objective implementation of the system.

Conclusions

1. SMACNA contractors perform at a high level.
2. The areas of improvement identified in the research included a high degree of management, coordination, public relations, and business issues. If SMACNA contractors put more effort into the customer issues, it would lead to the owner's perception of an increase in performance.
3. One of the major issues in the HVAC area is the performance of the installed system.
4. Performance based procurement allows union contractors to be highly competitive in performance based environments.
5. Owners will pay more for performance if performance can be identified.
6. Owners are interested in reducing their risk by hiring higher performance contractors.
7. Performance information assists in encouraging owners that performance based procurement is a viable procurement alternative.

Recommendations

Initiate or further enhance training and educational business programs to improve performance in areas requiring attention and capitalize in those strong areas by emphasizing customer satisfaction and public relations.

Include in training and educational programs the results of the study, the criteria used and the potential for increased performance and business based on expanded market opportunities.

Performance Based Studies Research Group

College of Engineering and Applied Sciences, Arizona State University

Sponsoring Body: SMACNA Testing and Research Institute

SMACNA (Sheet Metal/ Mechanical) Contractor Performance

Customer Evaluation Form

S. No.	Performance Criteria	Scale	Rating
1.00	**Quality of Workmanship (Score wherever applicable)**		
1.1	Housekeeping	1-10	
1.2	Equipment placement/ start-up	1-10	
1.3	Duct Work fabrication/ installation	1-10	
1.4	Piping work	1-10	
1.5	Skill level in control instruments/ equipment installation	1-10	
1.6	Skill level in testing/ balancing	1-10	
1.7	Start-up and commissioning programs	1-10	
2.0	**Competency Level**		
2.1	Ability to manage complex Job	1-10	
2.2	Capability to meet specifications/ Codes	1-10	
2.3	Knowledge of codes	1-10	
2.4	Interpretation of the drawings	1-10	
2.5	Skill level of Project Team	1-10	
2.6	Skill level of craftsmen	1-10	
2.7	Competency and technical/ management skills of foremen	1-10	
2.8	Overall technical knowledge/ competency of contractor	1-10	
2.9	Subcontractors quality of work and skill level	1-10	
2.10	Ability to install systems efficiently	1-10	
2.11	Minimization of punch list	1-10	
2.13	Speed and quality of rectifying punch list	1-10	
2.14	Is the project cost indicated on cover page accurate? If not specify the correct amount.	Y/N	
3.0	**Level of Professionalism**		
3.1	Professional attitude towards work	1-10	
3.2	Professional appearance	1-10	
3.3	Attitude towards satisfying customer's project needs	1-10	
3.4	Minimization of disruption to project operations	1-10	
3.5	Honesty level of the contractor	1-10	
4.0	**Effective Scheduling/ Planning**		
4.1	Conformance to project schedules	1-10	
4.2	Timely updating of project schedules	1-10	
4.3	Were all long lead items performed on time	Y/N	
4.4	Effectiveness of contractor's project planning	1-10	
4.5	Ability to coordinate project	1-10	
4.6	Plan work in advance to avoid interference	1-10	
4.7	Attendance in project review meetings	1-10	

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Customer Evaluation Form

S. No.	Performance Criteria	Scale	Rating
4.8	Subcontractors and suppliers planning/ scheduling	1-10	
4.9	Effectiveness of overall project management	1-10	
4.10	Plans in advance to avoid interference	1-10	
4.11	Ability to resolve disputes/ project problems	1-10	
4.12	Minimization of time lost in resolving problems	1-10	
4.13	Ability to close-out project efficiently	1-10	
5.0	**Customer's Rating of Contractor**		
5.1	Customer Satisfaction	1-10	
5.2	Contractor's trustworthiness/ fairness on project	1-10	
5.3	Quality of finished product	1-10	
5.4	Finish within cost expectations	1-10	
5.5	Justification of value of work performed and project cost	1-10	
5.6	project	1-10	
5.7	Ability of contractor to maximize owner's resources	1-10	
5.8	Effectiveness of contractor's TQM plan	1-10	
5.9	Ability to resolve problems with the Design team	1-10	
5.10	Ability to maintain working relationship with owner	1-10	
5.11	Knowledge and familiarity with owner's special needs	1-10	
5.12	Coordination with other contractors	1-10	
6.0	**Contractor's Response on Project**		
6.1	Inquiry - Good use of questions (RFI)	1-10	
6.2	Response to customer needs	1-10	
6.3	Warranty Work Response	1-10	
6.4	Change Orders Response	1-10	
6.5	Timeliness in updating reports	1-10	
6.6	Response		
6.61	Field response	1-10	
6.62	Shop/ production response	1-10	
6.63	Full time service department response	1-10	
7.0	**Safety Level of Contractor**		
7.1	Knowledge of OSHA requirements	1-10	
7.2	Attitude of contractor's workers towards safety codes	1-10	
7.3	Job safety performance of the constructor	1-10	

ATTACHMENT B

SMACNA CONTRACTORS' PERFORMANCE LINES

NO.	PREFORMANCE CRITERIA	UNIT
1	Housekeeping	(1-10)
2	Equipment placement/start-up	(1-10)
3	Duct Work fabrication/installation	(1-10)
4	Start-up and commissioning programs	(1-10)
5	Skill level in testing/balancing	(1-10)
6	Ability to manage complex Job	(1-10)
7	Capability to meet specifications/Codes	(1-10)
8	Knowledge of codes	(1-10)
9	Skill level of craftsmen	(1-10)
10	Overall technical knowledge/competency of contractor	(1-10)
11	Ability to install systems efficiently	(1-10)
12	Minimization of punch list	(1-10)
13	Minimization of disruption to project operations	(1-10)
14	Honesty level of the contractor	(1-10)
15	Timely updating of project schedules	(1-10)
16	Effectiveness of contractor's project planning	(1-10)
17	Effectiveness of overall project management	(1-10)
18	Minimization of time lost in resolving problems	(1-10)
19	Ability to close-out project efficiently	(1-10)
20	Customer Satisfaction	(1-10)
21	Quality of finished product	(1-10)
22	Finish within cost expectations	(1-10)
23	Knowledge and familiarity with owner's special needs	(1-10)
24	Coordination with other contractors	(1-10)
25	Response to customer needs	(1-10)
26	Warranty Work Response	(1-10)
27	Change Orders Response	(1-10)
28	Knowledge of OSHA requirements	(1-10)
29	Job safety performance of the constructor	(1-10)
30	Performance of air distribution system	(1-10)
31	Noise level	(1-10)
32	Overall comfort level	(1-10)
33	Energy efficiency of system	(1-10)
34	Performance level of mechanical equipments	(1-10)
35	Overall quality of system installed	(1-10)